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that a progressive system of plant improvement cannot be a one-sided system, but must embrace all possible methods of reaching the desired end; (2) artificial hybridization provides an invaluable means of obtaining characters in superior combinations which do not occur in nature and this method is now largely used at Svalöf for this purpose; (3) the old system of "mass selection" can still be of value in special cases and has never been fully abandoned; (4) instead of basing the isolation of superior individuals (or lines) purely upon botanical or morphological characters, as was formerly done, the principle has become to select a large number of individuals without special regard to such characters, the valuation of these individuals (or lines) to rest upon tests conducted with the greatest care and extending over a series of years. This means the recognition of the importance of physiological as well as morphological unit characters, and the abandonment of reliance upon the use of correlation of characters as any important aid in estimating the practical value of an individual or line.

Detailed reports of some investigations, some sixty illustrations from drawings and photographs, and a comprehensive bibliography add to the value of the volume. Dr. TEDIN, specialist for barley at Svalöf, says of the book: "The exposition is pertinent and correct and thereby distinguishes itself from practically all accounts hitherto written in a foreign language."—GEO. D. FULLER.

The cotton plant

W. LAWRENCE BALLS, "cryptogamic botanist" on the staff of the Khedivial Agricultural Society, has published a volume on the cotton plant in Egypt.⁴ It brings together information of the most varied character, the material being assembled as if to "take account of stock" preliminary to a fuller monograph. The four sections of the book treat of the history of cotton in Egypt, the individual plant, the race, and the economics of cotton, the second and third sections being of special interest to botanists.

In the account of "the individual plant" a brief outline of fertilization (including the conspicuous cytological features) and embryology is given (8 pp.), followed by an account of experimental work on "development and environment" (67 pp.). This physiological work includes such topics as germination conditions, temperature and growth, effect of sunshine, night temperatures, hypocotyl and root growth, transpiration (including its relation to stomata), tissue temperatures, photosynthesis, the growth curve, the flowering curve, etc. The cotton fiber of course is described in detail (8 pp.). In the account of "the race," the problems of fluctuation, commercial varieties, natural crossing, and heredity are presented (87 pp.), quite a number of graphs presenting to the eye the results of much experimental work.—J. M. C.

⁴ BALLS, W. LAWRENCE, *The cotton plant in Egypt; studies in physiology and genetics.* pp. xvi+202. figs. 71. London: Macmillan & Co. 1912. 5 s.